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(71) Applicant: KIMBERLY-CLARK WORLDWIDE, INC. [US/US]; 401 North Lake Street, Neenah, WI 54956 (US).

(72) Inventors: CHEN, Fung-jou; 3216 White Birch Lane, Appleton, WI 54915 (US). BEDNARZ, Julie, M.; 706 Division Street, Neenah, WI 54956 (US). LINDSAY, Jeffrey, D.; 20 Diane Lane, Appleton, WI 54915 (US). DI PALMA, Joseph; 451 East Peckham Street, Neenah, WI 54956 (US).

(74) Agents: PUGLIESE, Sebastian, C., III et al.; 401 N. Lake Street, Neenah, WI 54956 (US).

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Published
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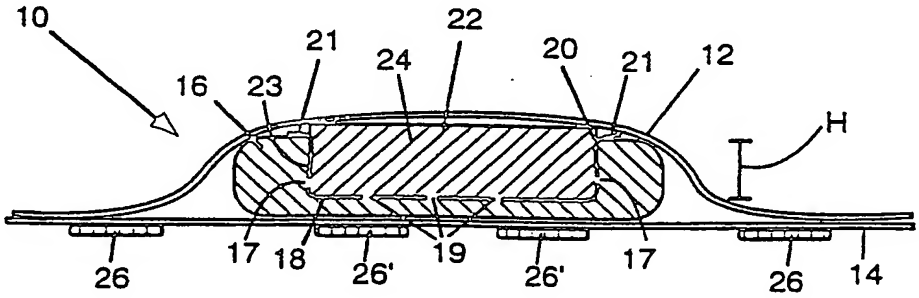
21 September 2000 (21.09.00)

(54) Title: ABSORBENT ARTICLE HAVING INTEGRAL WICKING BARRIERS



(57) Abstract

An absorbent article comprising a central absorbent member and a lateral wicking barrier for inhibition of wicking from the central regions of the article to an outlying outer absorbent member. The wicking barrier has a vertical component for prevention of radial wicking in the plane of the article and thus promotes center filling of the article with fluid and reduces the likelihood of leaks from the sides of the article. The wicking barrier can also have a horizontal component to prevent leakage, redirect fluid flow, and improve fit and performance of the article. In one embodiment, the central absorbent member is a concentric absorbent structure having alternating rings of barrier material and absorbent material, including a spiral wound composite formed from a layer of barrier material wound with a layer of absorbent material and then sliced to provide a thin absorbent layer having high permeability in the thickness direction but low permeability in the plane due to the barrier material. In a second embodiment the absorbent Core consists out of an outer absorbent member having a central void, open toward the body side of the absorbent article a central absorbent member disposed over and extending into the open void and a wicking barrier disposed between the outer and central absorbent member. In a second embodiment the absorbent core consists out of an outer absorbent member having a central void, open toward the body side of the absorbent article a central absorbent member disposed over and extending into the open void and a wicking barrier disposed between the outer and central absorbent member.

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INTERNATIONAL SEARCH REPORT

Interna* al Application No
PCT/uS 99/22167

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61F13/15

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 360 285 A (MCNEIL PPC INC) 28 March 1990 (1990-03-28)	1-13,15, 17, 19-25, 27-30, 33-36, 39-41, 43,46, 57-61, 80,82, 86,88-90
A	the whole document	79,97
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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 June 2000	29. 06. 2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Douskas, K

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 366 079 A (MCNEIL PPC INC) 2 May 1990 (1990-05-02) column 3, line 56 -column 5, line 42; claims; figures; examples	1-7,11, 12,14, 16,19, 20,30, 39,40, 58-61, 80,82,97
A	---	83,86
A	EP 0 391 727 A (MCNEIL PPC INC) 10 October 1990 (1990-10-10) page 6, line 2 - line 12; claims; figures 7,7B	1
A	---	
A	EP 0 597 273 A (MCNEIL PPC INC) 18 May 1994 (1994-05-18) claims; figures	1,86
A	---	
A	US 4 015 604 A (CSILLAG CHARLES) 5 April 1977 (1977-04-05) claims; figures	1
A	---	
A	WO 98 31318 A (GELLERSTEDT FREDRIK ;CHIHANI THAMI (SE); MOELNLYCKE AB (SE); FERNK) 23 July 1998 (1998-07-23) page 17, line 16 -page 18, line 32; figures 4A,4B	1
A	---	
A	US 3 143 113 A (MILLS) 4 August 1964 (1964-08-04) column 3, line 27 - line 60; figure 3	86-91
X	---	
X	US 4 676 784 A (ERDMAN EDWARD P ET AL) 30 June 1987 (1987-06-30) column 3, line 64 -column 4, line 3; figure 2	86
X	---	
X	GB 2 233 235 A (KAO CORP) 9 January 1991 (1991-01-09) page 7, line 11 -page 8, line 30 page 12, line 3 - line 24 page 16, line 31 -page 18, line 8; claims; figures	62-66, 68, 70-74, 102-108
A	---	
A	EP 0 483 592 A (KIMBERLY CLARK CO) 6 May 1992 (1992-05-06) claims; figures	62-64, 72,73, 102

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/22167

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 441 064 A (CHICOPEE) 14 August 1991 (1991-08-14) claims; figures ---	62-64, 72,73, 102
A	US 5 578 025 A (MAY MELISSE N) 26 November 1996 (1996-11-26) claims; figures ---	62,102
A	US 5 591 150 A (BITTAR SANDRA R ET AL) 7 January 1997 (1997-01-07) claims; figures -----	62,102

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

In ational application No.
PCT/US 99/22167

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-61, 79-101, 109-111

Absorbent article having an outer absorbent member having a central void, a central absorbent member disposed in and over the central void, and a wicking barrier disposed between the the outer absorbent member and the central absorbent member.

2. Claims: 62-78 102-108

Absorbent article having a absorbent member sourounded by an outer shaping member with a central void, a baffle layer beneath the absorbent member, and a wicking barrier disposed between the .the outer shaping member and the absorbent member.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 99/22167

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0360285 A	28-03-1990	US 4963139 A	16-10-1990
		AT 132358 T	15-01-1996
		AU 619346 B	23-01-1992
		AU 4170989 A	29-03-1990
		BR 8904777 A	01-05-1990
		CA 1306857 A	01-09-1992
		CN 1043441 A,B	04-07-1990
		DE 68925325 D	15-02-1996
		DE 68925325 T	11-07-1996
		ES 2083963 T	01-05-1996
		GR 89100601 A,B	31-10-1990
		IE 70590 B	11-12-1996
		JP 2191453 A	27-07-1990
		JP 2854036 B	03-02-1999
		MX 166086 B	17-12-1992
		NZ 230720 A	29-01-1992
		PH 26619 A	19-08-1992
		PT 91781 A,B	30-03-1990
		ZA 8907213 A	29-05-1991
		ZW 11489 A	10-06-1991
EP 0366079 A	02-05-1990	AT 149087 T	15-03-1997
		AU 631380 B	26-11-1992
		AU 4370689 A	26-04-1990
		BR 8905409 A	22-05-1990
		CA 2001370 A	24-04-1990
		CN 1043258 A,B	27-06-1990
		DE 68927793 D	03-04-1997
		DE 68927793 T	12-06-1997
		ES 2098224 T	01-05-1997
		GR 89100682 A,B	30-12-1991
		IE 78011 B	11-02-1998
		JP 2257951 A	18-10-1990
		NZ 231115 A	26-08-1992
		PT 92089 A,B	30-04-1990
		US 5399175 A	21-03-1995
		US 5151091 A	29-09-1992
		ZA 8908059 A	26-06-1991
		ZW 13289 A	12-06-1991
EP 0391727 A	10-10-1990	AT 124249 T	15-07-1995
		AU 653108 B	15-09-1994
		AU 4861293 A	16-12-1993
		AU 644068 B	02-12-1993
		AU 5302690 A	11-10-1990
		BR 9001626 A	07-05-1991
		DE 69020404 D	03-08-1995
		DE 69020404 T	09-11-1995
		ES 2074121 T	01-09-1995
		GR 90100257 A,B	27-09-1991
		HK 12796 A	02-02-1996
		IE 67377 B	20-03-1996
		JP 2992052 B	20-12-1999
		JP 3063050 A	19-03-1991
		NZ 233245 A	27-04-1995
		PT 93693 A,B	20-11-1990
		US 5817079 A	06-10-1998
		ZA 9002659 A	24-12-1991

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 99/22167

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0597273	A	18-05-1994	AT	167622 T	15-07-1998
			AU	679689 B	10-07-1997
			AU	4900793 A	28-04-1994
			CA	2108310 A	15-04-1994
			DE	69319303 D	30-07-1998
			DE	69319303 T	22-10-1998
			ES	2119845 T	16-10-1998
			FI	934518 A	15-04-1994
			GR	93100405 A,B	30-06-1994
			NO	933687 A	15-04-1994
			US	5981824 A	09-11-1999
			US	5807365 A	15-09-1998
US 4015604	A	05-04-1977	AR	216758 A	31-01-1980
			AT	970076 A	15-05-1981
			AU	504756 B	25-10-1979
			AU	2155277 A	27-07-1978
			BE	850009 A	30-06-1977
			NL	7701456 A	08-11-1977
			DE	2658606 A	06-10-1977
			FR	2355513 A	20-01-1978
			GR	60785 A	28-08-1978
			IN	145028 A	12-08-1978
			IT	1073165 B	13-04-1985
			JP	1263674 C	16-05-1985
			JP	52118358 A	04-10-1977
			JP	59039134 B	21-09-1984
			LU	76767 A	30-06-1977
			NL	7700489 A	27-09-1977
			NZ	183124 A	11-01-1979
			PH	13089 A	23-11-1979
			PT	66051 A,B	01-02-1977
			ZA	7607658 A	30-08-1978
			ZM	1977 A	21-11-1977
WO 9831318	A	23-07-1998	AU	5786998 A	07-08-1998
			EP	1005308 A	07-06-2000
			PL	334733 A	13-03-2000
			SE	9700158 A	22-07-1998
			ZA	9800120 A	08-07-1998
US 3143113	A	04-08-1964	NONE		
US 4676784	A	30-06-1987	AT	56611 T	15-10-1990
			AU	583264 B	27-04-1989
			AU	4188585 A	07-11-1985
			BR	8502058 A	31-12-1985
			CA	1239012 A	12-07-1988
			DE	3579734 D	25-10-1990
			DK	193385 A	02-11-1985
			EP	0160572 A	06-11-1985
			GR	851053 A	25-11-1985
			HK	30691 A	26-04-1991
			JP	60249953 A	10-12-1985
			NO	851723 A	04-11-1985
			NZ	211936 A	27-03-1990
			PT	80373 A,B	01-05-1985
			ZA	8503230 A	30-12-1986

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 99/22167

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2233235 A	09-01-1991	NONE	
EP 0483592 A	06-05-1992	AU 640002 B	12-08-1993
		AU 7603691 A	30-04-1992
		CA 2037210 A	17-04-1992
		JP 4282153 A	07-10-1992
		MX 9101415 A	05-06-1992
		US 5423788 A	13-06-1995
		ZA 9107490 A	24-02-1993
EP 0441064 A	14-08-1991	US 5030229 A	09-07-1991
		AT 118334 T	15-03-1995
		BR 9100080 A	22-10-1991
		DE 69016996 D	23-03-1995
		DE 69016996 T	22-06-1995
		ES 2076340 T	01-11-1995
		IE 70064 B	30-10-1996
		ZA 9100242 A	30-09-1992
US 5578025 A	26-11-1996	AU 705869 B	03-06-1999
		AU 2705695 A	25-01-1996
		EP 0768853 A	23-04-1997
		JP 10502281 T	03-03-1998
		WO 9601095 A	18-01-1996
US 5591150 A	07-01-1997	US 5334176 A	02-08-1994
		US 5824004 A	20-10-1998
		US 5356405 A	18-10-1994
		AU 701627 B	04-02-1999
		AU 2360895 A	05-12-1995
		AU 9712098 A	04-03-1999
		EP 0749297 A	27-12-1996
		JP 10500047 T	06-01-1998
		WO 9531165 A	23-11-1995
		ZA 9503794 A	16-04-1996
		AT 184475 T	15-10-1999
		AT 142467 T	15-09-1996
		AT 143247 T	15-10-1996
		AT 148831 T	15-02-1997
		AT 174208 T	15-12-1998
		AT 155032 T	15-07-1997
		AT 142468 T	15-09-1996
		AT 149823 T	15-03-1997
		AU 669118 B	30-05-1996
		AU 2318392 A	23-02-1993
		AU 663104 B	28-09-1995
		AU 2374292 A	23-02-1993
		AU 2383092 A	23-02-1993
		AU 2383192 A	23-02-1993
		AU 2399392 A	23-02-1993
		AU 662350 B	31-08-1995
		AU 2402592 A	23-02-1993
		AU 662757 B	14-09-1995
		AU 2420492 A	23-02-1993
		AU 2421392 A	23-02-1993
		AU 2507595 A	14-09-1995
		AU 2507695 A	14-09-1995
		AU 4021895 A	29-02-1996

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internal Application No
PCT/US 99/22167

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5591150 A		AU 4021995 A	29-02-1996
		AU 5844198 A	04-06-1998
		AU 5951498 A	01-10-1998
		AU 5954298 A	01-10-1998
		AU 8189298 A	15-10-1998
		AU 8307898 A	24-12-1998
		BR 9205320 A	05-04-1994
		BR 9205329 A	05-10-1993
		BR 9205330 A	16-11-1993
		BR 9205346 A	16-11-1993
		BR 9206307 A	02-08-1994
		CA 2092196 A,C	24-01-1993
		CA 2092197 A	24-01-1993
		CA 2092198 A,C	24-01-1993
		CA 2092199 A	24-01-1993
		CA 2092202 A,C	24-01-1993
		CA 2092203 A	24-01-1993